

## REMARKS

After entry of this Amendment, claims 1–49 and 61 will be pending. Claims 50–60 and 62–63 have been canceled, and claims 35 and 61 have been amended.

More specifically, claim 35 has been amended to correct an editorial error, and claim 61 has been rewritten in independent form. No new matter has been added; support for amended claims 35 and 61 may be found, for example, in the originally filed claims and page 11, line 23 – page 12, line 3 of the specification.

### Rejection Under 35 U.S.C. § 102

Claims 1–63 are rejected under 35 U.S.C. § 102 (e) as being unpatentable over U.S. Patent Publication 2004/0031979 to Lochtefeld et al. (“Lochtefeld”).

Lochtefeld teaches the formation of transistors, including finFET transistors and heterojunction bipolar transistors. The only discussion of depletion regions by Lochtefeld is with respect to depleted channel regions, as indicated in the following exemplary passage:

This structure ... is not conducive to the production of fully-depleted strained-semiconductor-on-insulator devices in which the layer over the insulating material must be thin enough [ $<300$  angstroms ( $\text{\AA}$ )] to allow for full depletion of the layer during device operation.

*See* paragraph [0005]. Moreover, Lochtefeld does not mention off currents. Lochtefeld, therefore, does not teach (i) forming a layer having a depletion region less than approximately 20 angstroms and removing a portion of the layer to define a gate transistor, or (ii) heating a substrate to a temperature to activate dopants, the temperature being sufficiently low to prevent the dopants from diffusing enough to induce a high off current, as recited in independent claim 1.

Applicants submit that for at least these reasons, independent claim 1 and claims dependent therefrom are patentable.

Lochtefeld describes the formation of gates and source/drain regions. *See, e.g.,* paragraph [0088], [0113]–[0114], [0122], and [0126]–[0127]. Lochtefeld does not, however, teach or suggest (i) heating a substrate for a first time period to alter a distribution of a first plurality dopants in a gate electrode layer and (ii) heating the substrate for a second time period

to activate a second plurality of dopants, with the second time period having a shorter duration than the first time period, as recited in amended independent claim 35.

Applicants submit that, for at least these reasons, amended independent claim 35 and claims dependent therefrom are patentable.

Lochtefeld does not teach or describe a first and a second transistor having sources and drains disposed in a strained layer and having gates comprising different metals with substantially workfunctions, as recited in amended independent claim 61. Lochtefeld mentions the formation of a single transistor having a metal gate comprising a metal with an appropriate workfunction:

A gate 212 is formed over gate dielectric layer 210. Gate 212 may be formed of a conductive material, such as ... a metal ... that provide[s] an appropriate workfunction.

*See* paragraph [0087].

Applicants submit that for at least this reason, amended independent claim 61 is patentable.

The rejection of claims 50–60 and 62–63 is moot in view of the cancellation of these claims.

### CONCLUSION

In light of the foregoing, Applicants respectfully submit that all claims are now in condition for allowance.

If the Examiner believes that a telephone conversation with Applicants' attorney would expedite allowance of this application, the Examiner is cordially invited to call the undersigned attorney at (617) 570-1806.

Applicants believe that no fee is necessitated by the filing of this Amendment and Response. However, if any additional fee is due, please charge said fee occasioned by this paper to our Deposit Account No. 07-1700.

Respectfully submitted,

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